

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

GREEN MOUNTAIN GLASS, LLC AND
CULCHROME, LLC,

Plaintiffs,

v.

OWENS ILLINOIS, INC., AND OWENS-
BROCKWAY GLASS CONTAINER INC.

Defendants.

Civil Action No. 6:19-cv-600

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

1. Plaintiffs GREEN MOUNTAIN GLASS, LLC (“GMG”) and CULCHROME, LLC (“Culchrome”) for their Complaint against Defendants OWENS ILLINOIS, INC. and OWENS-BROCKWAY GLASS CONTAINER INC. (collectively, “O-I”), allege:

THE PARTIES

2. Plaintiff GMG is a Delaware limited liability company with its principal place of business at 895 Glenbrook Ave, Bryn Mawr, PA 19010.

3. Plaintiff Culchrome is a Delaware limited liability company with its principal place of business at 895 Glenbrook Ave, Bryn Mawr, PA 19010.

4. Culchrome is the assignee and GMG is the exclusive licensee of United States Patents Numbers 5,718,737 (attached as Exhibit 1) and 6,230,521 (attached as Exhibit 2) (the “patents-in-suit”).

5. Plaintiffs are informed and believe, and on that basis allege, that Defendant Owens Illinois Inc. is a Delaware corporation with its principal place of business at One

Michael Owens Way, Perrysburg, Ohio. Plaintiffs are further informed and believe that Owens Illinois's registered agent is the Corporation Trust Company, Corporation Trust Center, 1209 Orange St., Wilmington, DE 19801.

6. Plaintiffs are informed and believe, and on that basis allege, that Defendant Owens-Brockway Glass Container Inc. is a Delaware corporation with its principal place of business at One Michael Owens Way, Perrysburg, Ohio. Plaintiffs are further informed and believe that Defendant Owens-Brockway Glass Container Inc. is a wholly-owned subsidiary of Owens Illinois, Inc. Plaintiffs are further informed and believe that Owens Illinois's registered agent is the Corporation Trust Company, Corporation Trust Center, 1209 Orange St., Wilmington, DE 19801. In this complaint, Plaintiffs refer to Defendants Owens Illinois Inc. and Owens-Brockway Glass Container Inc. collectively as "Owens Illinois" or "O-I."

7. O-I currently has at least sixteen glassmaking plants in the United States, including one located at 5200 Beverly Dr, Waco, TX 76711. The Waco plant opened for production in 1944, currently employs about 300 people, and recently completed an approximately \$74 million expansion. Part of the expansion focused on installing equipment to reduce emissions and continuous emissions monitoring systems in phases throughout the plant.

JURISDICTION AND VENUE

8. The court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a) because this action arises under the patent laws of the United States, 35 U.S.C. §§ 1 et seq.

9. This Court has personal jurisdiction over O-I because, inter alia, it has done and continues to do business in Texas and has committed acts of patent infringement in the state of Texas, including making, using, offering to sell and/or selling accused methods and products in

Texas. For example, Plaintiffs are informed, and on that basis allege, that O-I maintains an established place of business in the state of Texas and the Western District of Texas specifically, including a glass plant at 5200 Beverly Dr, Waco, TX 76711. Like O-I's other glass plants in the United States, the glassmaking methods used at the Waco plant infringed the patents-in-suit.

10. Venue is proper in this federal district pursuant to 28 U.S.C. §§ 1391(b)-(c) and 1400(b) because, as already discussed, O-I maintains an established and regular place of business in this District and has committed acts of patent infringement here.

**THE PARTIES' PAST RELATIONSHIP AND O-I'S KNOWING USE OF
PLAINTIFFS' TECHNOLOGY**

11. O-I has knowingly made use of the patents-in-suit without fair compensation.

12. The patents-in-suit cover technology that allows glass manufacturers to use recycled glass of mixed colors in the manufacturing process. The industry commonly refers to this recycled glass as "mixed cullet." Cullet is cheaper than using raw materials. It also increases glass yield, reduces energy costs, decreases particulates and emissions, and extends glass furnace life when compared to the use of "virgin" raw materials to make glass products. The patents-in-suit permit glass manufacturers like O-I to dramatically increase the amount of cullet used to make glass products, allowing more of the millions of tons of mixed cullet created each year to be used in the glass manufacturing process.

13. Plaintiffs met with O-I on multiple occasions to discuss Plaintiffs' patented technology and the patents-in-suit. Plaintiffs also discussed their patented technology with senior glass engineers and cullet procurement managers at O-I. In fact, in 1995, O-I's Section Head of O-I Glass & Raw Materials Technology, Steven M. Weiser, and others traveled to New Jersey to meet with Plaintiffs' predecessor and discuss Plaintiffs' then-patent-pending technology (which would later issue as the '737 Patent) and adding colorizers and decolorizers


to mixed color cullet to make new recycled glass products of a single color.


14. During a 2005 conversation, O-I's Weiser told Plaintiffs' representatives that O-I had not seriously considered the use of mixed color cullet in the past because O-I did not want to encourage co-mingling recyclables. But since O-I was unable to stop such co-mingling of recyclables, O-I subsequently decided that it needed to deal with "the mixed issue." O-I's Weiser then told Plaintiffs' representatives that he and other O-I personnel involved in decision making needed to meet again regarding O-I's use of mixed color cullet.


15. Later in 2005, Plaintiffs and the inventor of the '521 Patent, Dr. Richard Lehman, traveled to O-I's Research and Development Center in Perrysburg, OH and discussed O-I's use of mixed color cullet with O-I's Section Head of Glass & Raw Materials Technology, Steven M. Weiser, and Manager of Global Sourcing for Cullet, Paul J. Smith. During that meeting, Dr. Lehman gave a presentation regarding Plaintiffs' "Mixed Color Cullet Technology – A Strategic Opportunity for O-I Containers." Included in that presentation were numerous slides explaining just a few of the ways that Plaintiffs' technology would benefit O-I, including for example:

The Value of Cullet

- ✿ Reduces energy consumption versus virgin batch in melter by 23-30%
- ✿ Increases furnace life by 10%
- ✿ Accelerates melting rate. Fixed assets produce more
- ✿ Reduces SO_x, NO_x, and particulate emissions in direct proportion to the reduction of virgin batch.
- ✿ Reduces CO₂ emission (0.23 ton/ton cullet), a prime greenhouse gas
- ✿ In this era of sustainable resources, the glass industry must maximize the economic and environmental benefits at hand.







What is GMG Technology? What can it do for O-I?

★ **GMG Technology** is a series of processes that allow CGMs to produce amber or green bottles using a high percentage of mixed color cullet.

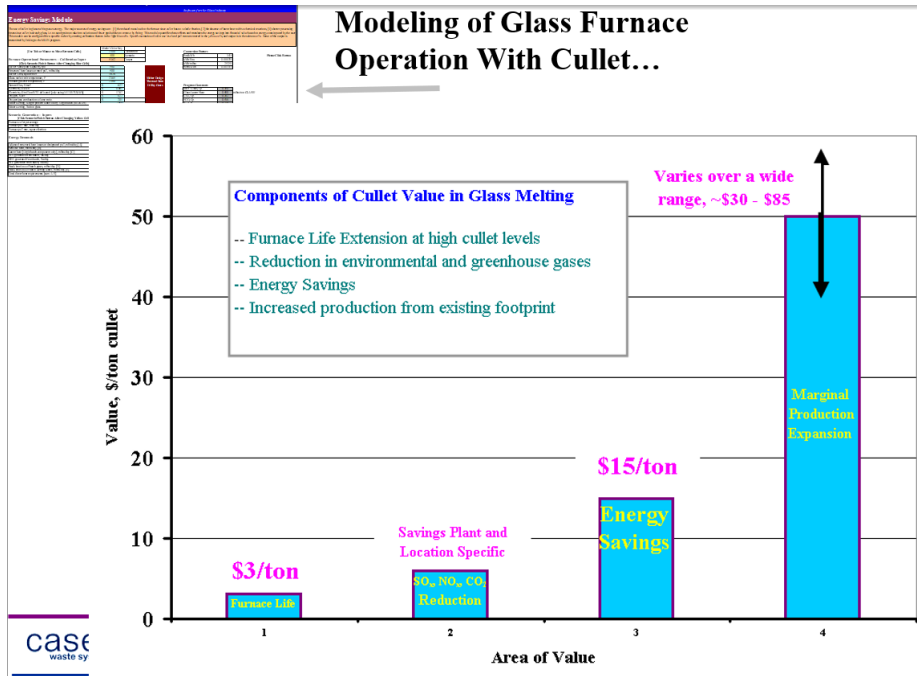
★ **Specifics, amber glass:** [Note: GMG uses the AB specifications for amber as the quality plateau for all statements regarding production of amber glass or bottles.]

- Provides for the decolorization and colorization of molten glass using a high percentage of clean three mix cullet to produce *amber glass* to specification.
- Allows *amber glass* manufacturers to use high levels of cullet, in which the green fraction of the total batch may be $\geq 20\%$.
- Requires no color separation and uses current optical sorting methods to remove contaminants and clean the three color mixed cullet to produce C3MC™ cullet
- Requires only small amounts of readily available inexpensive chemical additives to control the glass color. These materials are easily incorporated into the current glass plant materials handling process.

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16. During that 2005 meeting, O-I's representatives also admitted that O-I was then using mixed color cullet, by managing off-color cullet and glass chemistry, and actually desired to acquire more mixed color cullet from Plaintiffs for use in its manufacturing processes. Plaintiffs and O-I discussed the possibility of a plant demonstration of using mixed color cullet

in one or more of O-I's manufacturing plants. But, by this time, O-I insisted to Plaintiffs that O-I was using "their own" technology and processes to make recycled glass containers from mixed color cullet, and therefore did not need Plaintiffs' technology to use mixed color cullet to make recycled glass containers of a particular color from mixed color cullet.

17. Later in 2005, Plaintiffs' patent attorney and O-I's patent attorney discussed the possibility of entering into a cullet supply agreement by which Plaintiffs would provide O-I with mixed color cullet for use in its glassmaking processes along with a license for O-I to use Plaintiffs' mixed color cullet technology, including the patents-in-suit.

LICENSED PATENTS

<u>U.S. Patent Number</u>	<u>Issue Date</u>	<u>Title</u>
5,718,737	2/17/98	Method of Recycling Mixed Color Cullet into Amber, Green or Flint Glass
6,230,521	5/15/01	Method of Recycling Batches of Mixed Color cullet into Amber, Green or Flint Glass with Selected Properties
6,763,280	7/13/04	Automated Process for Recycling Batches of Mixed Color Cullet into Amber, Green or Flint Glass with Selected Properties
6,810,301	10/26/04	A Method of Recycling Batches of Mixed Color Cullet into amber, Green or Flint with Selected Properties
<u>U.S. Patent Application Number</u>	<u>Filing Date</u>	<u>Title</u>
10/902,300	7/29/04	Glass Bottles made from Recycled Mixed Color Cullet

18. But as these negotiations progressed, O-I eventually stated the position that it would not agree to any cullet supply agreement with Plaintiffs for mixed color cullet, unless and until Plaintiffs removed all intellectual property and licensing language from the draft agreement, including any references to the patents-in-suit. O-I again insisted that it did not need or want Plaintiffs' technology to use mixed color cullet because O-I allegedly had "their own" methods for creating recycled glass products from mixed color cullet.

19. In 2006, O-I submitted a "Letter of Support and Participation in the Green Mountain Glass Recycling Project, California Grant Application MRB 020." In that letter,

submitted in support of Plaintiffs' grant application to the State of California, O-I stated that it was submitting "a letter of enthusiastic support" for Plaintiffs' proposed grant program entitled, 'Effective Use of Mixed Color Cullet in Glass Container Manufacturing.'"

20. O-I's letter continued: "Green Mountain Glass's efforts to increase recycling and to enhance the amount of glass that can be returned to the glass manufacturer is certainly the right direction in glass reprocessing and represents a win/win situation for glass container manufacturers and environmental programs. Indeed, the expanded use of 3-mix cullet appears to be the only way in which two important goals are achieved: high overall glass recycling rates and establishing an adequate economical supply of cullet to the glass container industry."

21. In that same letter, O-I even "gladly" agreed to participate in Plaintiffs' grant program: "O-I will gladly participate in the program to provide glass manufacturing expertise and to assess and validate the data from the various tasks. Our participation will span the five major tasks of the program, but will be most concentrated in three areas: assessing the quality of the cleaned 3-mix cullet. Evaluating the color variability over time of the cullet stream and the ability of the cullet reader and software to identify and accommodate these changes, and determining the applicability of using this system at the plant level."

22. O-I's letter then concluded: "I look forward to this collaboration between our companies and the State of California. Certainly O-I has substantial container producing facilities in the state and this program could be a major boost not only to O-I but to all container manufacturers and recyclers in California."

23. After these and other meetings and discussions with Plaintiffs, O-I began publicly stating its desire to increase the amount of cullet it uses in its glass manufacturing plants to create new glass products from recycled materials. For example, in 2008, following on

Plaintiffs' grant application to the State of California to increase the use of mixed color cullet in glass container manufacturing, O-I submitted its own grant proposal to the State of California in hopes of "raising [its] level of post consumer cullet use." Therein, O-I informed the State of California that its "corporate goal is to maximize cullet use wherever there is material available and it is feasible to do so" and that O-I's "goal for cullet use is 80% for green and amber furnaces and 65% for flint production."

24. Emphasizing that "we want and must increase our use of cullet in our furnaces," O-I then stressed to the State of California many of the same benefits of mixed color cullet use that Plaintiffs had earlier presented to O-I when discussing Plaintiffs' technology:

Challenges Today and in the Future:

Our business uses a lot of energy to melt raw materials to make our glass containers. With energy use and raw material we have GHG emissions. We are aware of the Cap and Trade legislation in California and the likelihood that this type of program will be expanded elsewhere in the US after the Federal election. **We must act to bring down our energy and GHG profile and using more cullet is an excellent way to accomplish part of this goal.**

When OB replaces cullet for batch materials we gain in a number of ways. The reasons are when using batch materials especially soda ash and limestone there is a chemical reaction when these commodities are heated. A component of the material turns to gas mostly CO₂, we call this fusion loss. There is virtually no fusion loss when melting cullet versus batch materials. In a furnace melting only batch materials (not ever done in our plants) we would lose up to 17% due to fusion loss.

25. In the years since, O-I has continued to publicly emphasize its goal of maximizing the amount of recycled glass cullet it uses in its container glassmaking processes, as well as the multitude of benefits that O-I receives from making recycled glass products from glass batches containing mixed color cullet.

26. For instance, in its 2014 Form 10K submitted to the United States Securities and Exchange Commission, O-I stated that "increase[ing] the amount of cullet, or recycled glass, used in the production process" was key to achieving O-I's sustainability goals. Stating that O-I "is an important contributor to recycling efforts worldwide and is among the largest users of

recycled glass containers,” O-I also stressed that “[i]f sufficient high-quality recycled glass were available on a consistent basis, the Company has the technology to make glass containers using a high proportion of recycled glass,” and that incorporating cullet in its glass batches “reduces energy costs and impacts the operating life and efficiency of the glass melting furnaces.”

Sustainability and the Environment

The Company is committed to reducing the impact its products and operations have on the environment. As part of this commitment, the Company has set targets for increasing the use of recycled glass in its manufacturing process, while reducing energy consumption and carbon dioxide equivalent (“CO₂”) emissions. Specific actions taken by the Company include working with governments and other organizations to establish and financially support recycling initiatives, partnering with other entities throughout the supply chain to improve the effectiveness of recycling efforts, reducing the weight of glass packaging and investing in research and development to reduce energy consumption in its manufacturing process. The Company invests in technology and training to improve safety, reduce energy use, decrease emissions and increase the amount of cullet, or recycled glass, used in the production process.

Glass Recycling and Bottle Deposits

The Company is an important contributor to recycling efforts worldwide and is among the largest users of recycled glass containers. If sufficient high-quality recycled glass were available on a consistent basis, the Company has the technology to make glass containers containing a high proportion of recycled glass. Using recycled glass in the manufacturing process reduces energy costs and impacts the operating life and efficiency of the glass melting furnaces.

27. As another example, in marketing materials for its Atlanta, GA plant, O-I again stressed the benefits of maximizing the use of cullet when making new containers, stated a “goal of achieving a recycled content of 60 percent in glass containers globally by 2017,” and made clear that O-I was using mixed color cullet in order to realize those benefits and achieve its goals:

Glass is resource efficient, and can be reused in its original form more than other packaging materials. Glass recycling and reuse contribute significantly to reducing glass packaging's carbon footprint. The use of recycled glass or cullet in batch materials has the following beneficial impacts:

- Every 1 kg of cullet used replaces 1.2 kg of virgin raw materials that would otherwise need to be extracted.
- Every 10 percent of recycled glass or cullet used in production results in an approximate 5 percent reduction in carbon emissions and energy savings of about 3 percent.

Several initiatives are underway in the glass industry that will further increase the efficiency of glass packaging, including:

- Efforts to improve recovery and recycling of glass containers to help eliminate the diversion of glass to landfill, leading to a decrease in energy use and global warming potential.
- Lightweighting glass containers reduces raw material usage, emissions, energy used and overall weight.

O-I has launched a long-range sustainability portfolio aimed at making continuous improvements to reduce energy, reduce emissions, increase cullet usage and improve safety practices. O-I has set a cullet usage goal of achieving a recycled content of 60 percent in glass containers globally by 2017.

O-I's plant in Atlanta, Ga., opened in 1957 and employs more than 240 people. The plant produces amber (brown) and flint (clear) glass containers for the beer market, manufacturing more than 540 tonnes of glass bottles per day. The Atlanta plant uses approximately 40 percent cullet in its amber production and approximately 35 percent in its flint production.



28. After meeting with Plaintiffs, O-I filed for and obtained United States Patent Number 9,475,724 regarding a method of “making soda-lime glass using 100 wt % cullet as the glass forming materials.” That patent relies on and expressly cites both patents-in-suit, as well as many of Plaintiffs’ other patents directed at using mixed color cullet, and confirms that the post-consumer cullet available today is mixed color cullet.

The glass-forming materials are comprised of 100 wt. % cullet. The secondary, additive materials may include colorants, decolorants, fining agents, oxidizers, reducers, or any other additive that does not contribute to the main oxide content of the soda-lime glass. If secondary, additive materials are used, the soda-lime glass batch may be comprised of at least 98 weight percent (wt. %)—preferably at least 99 wt. %—cullet with the remainder being the secondary, additive materials. At least some of the additive materials may be recycled materials. For example, at least some carbon content may be from recycled carbon. In another example, sodium sulfate and/or selenium may be from materials recycled from filter dust from the glass manufacturing facility, for example, from an electrostatic precipitator downstream of a dry scrubber. In a further example, at least some iron or aluminum content may be from recycled furnace slag. In such cases, the recycled content of the glass batch may exceed 99%.

The cullet may be post-consumer or post-industrial recycled glass. The term “post-consumer” recycled glass includes glass from municipal or commercial recycling efforts including, for example, glass from bottles, glassware, windows, and solar panels. The term “post-industrial” recycled glass includes production glass such as internal waste glass from the same glass-producing factory that is manufacturing the glass container **10**, external waste glass from another glass-producing factory, or glass from some other industrial setting. Most of the cullet may be provided in broken glass chunks or shards whose largest dimension may be approximately 70 mm to 90 mm in diameter. In a preferred embodiment, at least some of the cullet is provided as a powder.

The cullet is preferably pre-sorted, based on color, so that a level of contaminants does not exceed a certain amount. An embodiment of permissible pre-sorted cullet includes: 40-50 wt. % green glass, 40-50 wt. % flint glass, 5-15 wt. % amber glass, 0-2 wt. % blue glass and other colored glass, and less than 100 grams/ton of non-soda lime container glass. Additionally, the pre-sorted cullet of this embodiment preferably includes less than 1000 grams/ton of organics including soluble organics, like sugars, as well as visible free organics, like pieces of plastics. More particularly, the pre-sorted cullet preferably includes less than 500 grams/ton of visible free organics.

INFRINGEMENT OF U.S. PATENT NO. 5,718,737

29. Plaintiffs incorporate by reference Paragraphs 1-28 above.

30. On February 17, 1998, United States Patent No. 5,718,737 (the “’737 patent”)

was duly and legally issued for an invention entitled “Method of Recycling Mixed Colored

Cullet into Amber, Green, or Flint Glass.” Culchrome is the assignee of the '737 patent, and GMG is the exclusive licensee. Together they hold all rights and interest in the '737 patent.

31. O-I has infringed the '737 patent by its methods and processes for using mixed cullet in the glass manufacturing process and the manufacture, use, sale, importation, and/or offer for sale of products that are made using mixed cullet at least in part. O-I is liable for its infringement of the '737 patent pursuant to 35 U.S.C. § 271.

32. For example, O-I has infringed at least Claim 1 of the '737 patent which discloses a method of using mixed color cullet to make a glass bottle of a particular color. In particular, claim 1 discloses obtaining mixed color cullet having glass of at least two different colors, adding at least one of a decolorizing agent that decolorizes at least one of the colors of the mixed color cullet and a colorizing agent that enhances a remaining color of the mixed color cullet, melting the mixed color cullet and any colorizing and decolorizing agents to a molten state, and creating a recycled glass bottle.

33. O-I obtains mixed color cullet having glass of at least two different colors. For example, the below images show O-I obtaining mixed color cullet with at least two colors:

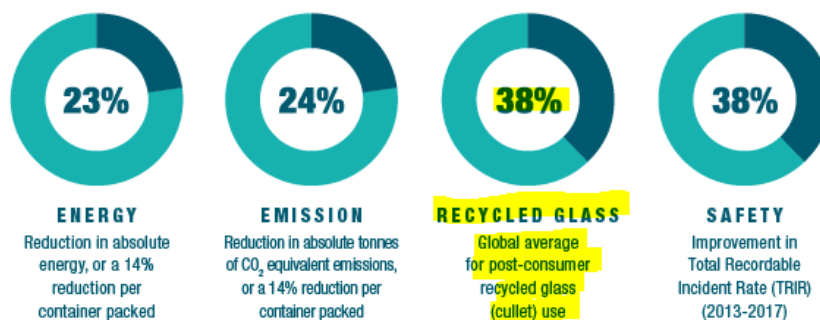




34. In addition, during one of the meetings between O-I and Plaintiffs, O-I confirmed that it purchases green cullet and combines it with amber cullet to make amber bottles. And O-I has confirmed compliance with California’s minimum mixed color cullet requirements, stating in an August 19, 2008 letter to the State of California Department of Conservation: “OB has never failed in its corporate goal to meet the state minimum content regulation of 35% post consumer cullet in our production.” Indeed, OI’s website confirms that it has used an average of 38% cullet in its glass bottles from 2007-2017:

OUR PROGRESS

O-I is a forward-thinking company, but we hold ourselves accountable for our past performance. Here’s a snapshot of the results we achieved (2007-2017) based on O-I’s previous sustainability goals.*



35. In the August 20, 2008 letter to the State of California, O-I also confirmed, “Our corporate goal is to maximize cullet use wherever there is material available and it is feasible to

do so.” O-I even provided specific goals: “Our goal for cullet use is 80% for green and amber furnaces and 65% for flint production.”

36. According to a March 26, 2003 O-I raw material specification sheet for cullet, O-I’s target color composition for “mixed cullet” containing amber, green, and flint colored glass was as follows:

6.4 **Mixed Cullet** – Total of non-amber and non-green cullet not to exceed 20.0%

	Target	Tolerance
Green	30.0%	+/- 20.0%
Amber	30.0%	+/- 20.0%
Flint + Georgia Green	30.0%	+/- 20.0%
Blue	0.0%	+ 5.0%
Other	0.0%	+ 20.0%

37. O-I also uses decolorizing agents and coloring agents to decolorize a color of the cullet and enhance a remaining color of the cullet. Not only is such use of colorizers and decolorizers necessary as a matter of glass science to make a glass bottle of a particular color when using mixed color cullet, but O-I’s public documents confirm that it so uses colorizers and decolorizers. For example, O-I’s US patent 9,475,724 (which cites both patents-in-suit) confirms the use of colorizers and decolorizers, or colorants and decolorants:

soda-lime glass with more stable quality. For example, additive materials may enable better aesthetic properties, such as color, and/or other physical qualities, such as seed (i.e., bubble) prevention and “redox” number adjustment. They do not include main oxide constituent glass forming materials of the soda-lime glass. Some notable secondary, additive materials include colorants, decolorants, fining agents, oxidizers, and reducers. The colorants and decolorants can be used to provide the soda-lime glass with a variety of colors including flint (colorless), amber, green, and blue. The fining agents can be used to prevent the

Colorants and decolorants are secondary, additive materials that will affect the color of the soda-lime glass wall 12. Colorants are compounds that produce a color in the soda-lime glass wall 12 other than flint, and decolorants are compounds that mask colors. Examples of suitable colorants may include, for example, iron oxides (e.g., FeO and/or Fe₂O₃), chromium oxides (e.g., CrO or Cr₂O₃), cobalt oxides (e.g., CoO or Co₂O₃), nickel, copper, selenium, manganese, titanium, and/or a combination of sulfur, iron, and carbon. Some of the different colors that can be promoted by these colorants are listed above in Table 1. Examples of suitable decolorants may include, for example, selenium, manganese, manganese dioxide, and cerium oxide. Selenium and manganese can both be used at low concentrations to neutralize the green tint often present in glass as a result of iron impurities. At higher concentrations, however, selenium and manganese begin to promote a reddish-pink color (peach) and a purple color, respectively.

38. In addition, O-I's public job listings identify "weighing colorizers and decolorizers" in the job description of a Furnace Engineer for a job posting:

O-I hiring Furnace Technician- Streator, IL in Perrysburg, OH ...
<https://www.linkedin.com/jobs/view/furnace-technician-streator-il-at-o-...>
 Owens-Illinois, Inc. (NYSE: OI) is the world's largest glass container manufacturer ... As required, operates mixing system on manual basis; weighs colorizer and ...

Computer Jobs, Employment in Perrysburg, OH | Indeed.com
<https://www.indeed.com/q-Computer-I-Perrysburg,-OH-jobs>
 Owens-Illinois. Perrysburg, OH. As required, operates mixing system on manual basis; weighs colorizer and decolorizers, using small hand scales; checks and ...

39. O-I melts the mixed color cullet with colorizing and decolorizing agents to a molten state, as O-I describes in the following video that shows how O-I melts the material into molten glass to then form glass bottles:

<https://www.youtube.com/watch?v=dOsXOsb7oz4>



O-I Fire and Sand - How Glass Is Made





O-I Fire and Sand - How Glass Is Made

40. O-I's acts of infringement have caused damage to Plaintiffs, and Plaintiffs are entitled to recover from O-I the damages sustained by Plaintiffs as a result of O-I's wrongful acts in an amount subject to proof at trial.

INFRINGEMENT OF U.S. PATENT NO. 6,230,521

41. Plaintiffs incorporate by reference Paragraphs 1-40 above.

42. On May 15, 2001, United States Patent No. 6,230,521 (the "'521 patent") was duly and legally issued for an invention entitled "Method of Recycling Batches of Mixed Color Cullet into Amber, Green, or Flint Glass with Selected Properties." Culchrome is the assignee of the '521 patent, and GMG is the exclusive licensee. Together they hold all rights and interest in the '521 patent.

43. O-I has infringed the '521 patent by its methods and processes for using mixed cullet in the glass manufacturing process and the manufacture, use, sale, importation, and/or offer for sale of products that are made using mixed cullet, at least in part. O-I is liable for its infringement of the '521 patent pursuant to 35 U.S.C. § 271.

44. For example, O-I infringed at least claim 1 of the '521 patent, which discloses a

method of creating recycled glass products of a particular color from mixed color cullet including at least two of green glass, amber glass, and flint glass comprising a number of steps. O-I's method of creating recycled glass products of a particular color using mixed color cullet practices these steps.

45. O-I selects virgin raw materials and determines the percentages of selected components or chemistry of said virgin glass raw materials:

Environment

Glass is made from three natural ingredients: sand, limestone and soda ash. It also has endless lives: it is 100 percent recyclable, from bottle to bottle, endlessly. In fact, a glass bottle can go from the recycling bin back to the store shelf in as little as 30 days.



46. O-I determines the percentages of selected components or chemistry of said raw raw materials, including for example SiO_2 , Al_2O_3 , Fe_2O_3 , CaO , MgO , BaO , SrO , Na_2O , K_2O , LiO_2 , TiO_2 , MnO , Cr_2O_3 , CoO , NiO , B_2O_3 , SO_3 , by analyzing raw material specifications, measuring the selected components of those materials, sending the raw materials out for testing, and/or through communications with the supplier(s) of each raw material. For example, O-I's public job descriptions confirm such analyses are done for both raw materials and cullet:

Your Role:

As a Technical Specialist in Glass Science, you will be responsible for technically supporting the building capabilities of the regional glass manufacturing operations by providing expertise to OI North America glass plants and the Technical Capabilities Group. You will also provide improvement advice to plants in the areas of glass composition, colorant forehearth operations, furnace color change programs and other quality issues related to glass chemistry issues. You will be responsible for the implementation of significant improvements in manufacturing capabilities as well as significant improvements in performance across the region while ensuring the standardization of best practice processes.

Your Responsibilities:

- Conduct/report analyses of raw material and cullet samples

47. In addition, O-I's US patent 9,475,724 (which cites both patents-in-suit) confirms the use of these same raw materials and associated components or chemistry:

Soda-lime glass, also called soda-lime-silica glass, is prevalent in the manufacture of glass containers and other articles. Such glass is comprised of three main oxide constituents: silica (SiO_2), soda (Na_2O), and lime (CaO) that are provided by the glass forming materials. Other oxides may also be present in smaller amounts. These additional oxides may include one or more of alumina (Al_2O_3), magnesia (MgO), potash (K_2O), iron oxide (Fe_2O_3), titanium oxide (TiO_2), sulfur trioxide (SO_3), and oxides of selenium, cobalt, chromium, manganese, and lead. A typical soda-lime glass composition may include, for example, about 60 wt. % to about 75 wt. % silica, about 10 wt. % to about 18 wt. % soda, about 5 wt. % to about 15 wt. % lime, and optionally about 0-2 wt. % alumina (Al_2O_3), about 0-4 wt. % magnesia (MgO), about 0-1.5 wt. % potash (K_2O), about 0-1 wt. % iron oxide (Fe_2O_3), about 0-0.5 wt. % titanium oxide (TiO_2), and about 0-0.5 wt. % sulfur trioxide (SO_3).

Soda-lime glass may be made by melting a batch of primary or glass-forming materials, and optional secondary or additive materials, and then cooling the resultant melt. The glass-forming materials are the materials from which the soda-lime glass derives its main oxide content—namely, the silica, soda, and lime content—and thus its amorphous physical state. There are generally two types of glass-formers or glass-forming materials: (1) virgin raw materials (sand, soda ash, and limestone), and (2) recycled glass or "cullet" as it is termed in the industry. Traditionally, the batch of primary or glass-forming materials used to make soda-lime glass could include some cullet—usually 10-40 wt. %, and up to 80 wt. %—with the rest being virgin raw materials. The use of greater amounts of cullet and lesser amounts of virgin raw materials has proven difficult to implement for many reasons, including limited color options, unstable melt temperatures in the melt furnace, and difficulties in achieving a uniform mix of cullet and virgin raw materials in the melt furnace.

48. O-I selects virgin glass raw materials and determines the percentages of selected components of said virgin glass raw materials in the process of creating each furnace's batch formula. For example, O-I specifies the oxide contribution of each virgin batch raw material that O-I has selected for use in the glass batch.

49. O-I determines the percentages of selected components or chemistry of said mixed color cullet, including for example SiO_2 , Al_2O_3 , Fe_2O_3 , CaO , MgO , BaO , SrO , Na_2O , K_2O , Li_2O , TiO_2 , MnO , Cr_2O_3 , CoO , NiO , B_2O_3 , SO_3 , by analyzing cullet specifications, measuring the selected components or chemistry of the mixed color cullet, sending the mixed

color cullet out for testing, and/or through communications with the supplier(s) of the mixed color cullet. As alleged above, O-I's public job descriptions confirm such analyses are done for both raw materials and cullet, and O-I's '724 patent discloses the use of mixed color cullet and associated components or chemistry.

50. O-I selects which mixed color cullet to use and determines the percentages of selected components of said mixed color cullet in the process of creating each furnace's batch formula. For example, O-I specifies the oxide contribution of all mixed color cullet that O-I has selected for use in the glass batch.

51. O-I determines how much mixed color cullet is to be melted as a fraction or percentage of the recycled finished glass in the process of creating each furnace's batch formula. O-I determines how much mixed color cullet to use in place of raw materials in the batch and thus in the recycled glass products produced from the batch by inputting the weights and percentages of all raw materials, including cullet, into the batch formula. For example, O-I's marketing materials state that O-I uses on average 38% cullet in the creation of recycled glass products, as alleged above. O-I's marketing materials further state that O-I has set a goal to make its glass products from at least 50% cullet as a fraction of the recycled finished glass:

At O-I, glass recycling is essential to our future success.



52. O-I specifies the percentage composition of said at least two of said amber, green, and flint glass in said mixed color glass cullet is illustrated by, for example, O-I's raw material specifications that govern its cullet purchases:

6.4 **Mixed Cullet** – Total of non-amber and non-green cullet not to exceed 20.0%

	Target	Tolerance
Green	30.0%	+/- 20.0%
Amber	30.0%	+/- 20.0%
Flint + Georgia Green	30.0%	+/- 20.0%
Blue	0.0%	+ 5.0%
Other	0.0%	+ 20.0%

53. O-I also tests, measures, and/or samples its cullet in order to specify and track the color composition of at least two of amber, green, and flint colored cullet in its mixed color cullet, including by determining its chemistry. For example, during meetings with Plaintiffs, O-I admitted that it tracks and specifies the color composition of the mixed color cullet that it uses, including by measuring that cullet and/or by mixing it to specified composition percentages:

Maximum flint in C3MC™ cullet. O-I wants a three-mix cullet with that contains a nominal maximum of 20% flint. When using such a cullet at the 50% level in the glass batch, this would mean the glass is melted from a maximum of 10% flint cullet. Thus, if FCR three-mix cullet were 45% flint, then 31.25 pounds of flint cullet would have to be removed from each 100 pounds of three-mix to produce a cullet that would meet O-I specs. See the attached table that presents the amounts of flint removal necessary for a range of cullet types.

Bottle bill state cullet. Paul told us that bottle bill states generate a three mix cullet that is 77% flint, 12.5% amber and 12.5% green. This is a major source of flint that can be used in two

Does Flint Harm Amber Glass? No. Steve Weiser pointed out that flint can very well be managed in amber glass. He noted that there have been times, incredibly, when O-I purposely mixed together single color cullet [SCC] flint (10 – 15%) with SCC amber (45%) and SCC green (10-15%) to make a composite cullet for their amber tanks. Economics at work, of course. The glass chemistry is handled in the usual manner and in this sense O-I seems quite competent in managing a mixture of colors in their tanks, much like S-G.

Green Cullet in Amber

Steve and Paul noted that they often buy green glass to add to their amber furnaces. It's cheap. More commonly they will buy gramber that is 50/50 amber/green and use it at high levels in the furnace. Clearly they know how to manage green cullet in amber glass. Steve noted a point that

54. O-I's US patent 9,475,724 also discloses the process of specifying the percentage composition of said at least two of said amber, green, and flint glass in mixed color cullet:







A soda-lime glass batch was prepared that included 100 wt. % cullet as the glass-forming materials. The cullet used was supplied as a mixture of several different types of glass. Specifically, the supplied cullet included the following mixture: 40-48 wt. % green glass, 42-50 wt. % flint glass, 6-14 wt. % amber glass, and 0-2 wt. % blue glass. The supplied cullet also included less than 250 g/ton of opal glass, less than 1000 g/ton of organics, less than 100 g/ton of plastics, less than 25 g/ton of ceramics, less than 5 g/ton of magnetic metals, and less than 5 g/ton of non-magnetic metals.

1. A process of making a soda-lime glass container, which includes the steps of:

(a) preparing a soda-lime glass batch that includes cullet, the cullet being pre-sorted by color to have 40-50 wt. % green glass, 40-50 wt. % flint glass, 5-15 wt. % amber glass, 0-2 wt. % blue glass and other colored glass, and less than 250 grams/ton of non-soda lime container glass, and wherein the cullet constitutes 100 wt. % percent of the glass-forming materials that are present in the soda-lime glass;

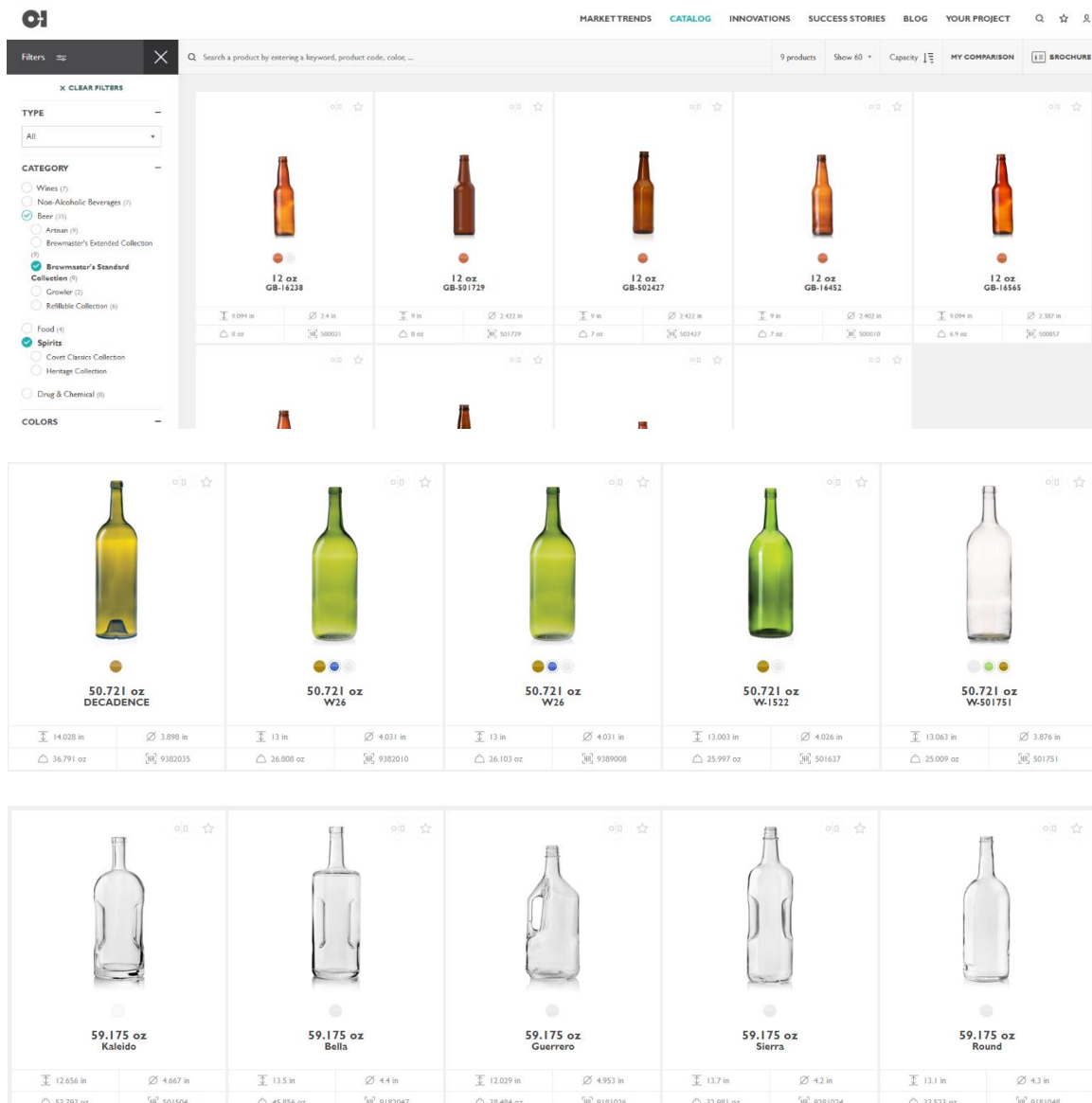
55. Prior to melting the glass batch, O-I specifies the final color of the recycled glass product and its corresponding transmission properties (e.g., redness ratio) that O-I is seeking to create from the batch containing mixed color cullet. O-I's public product catalog discloses O-I's ability to make recycled glass products of various colors, including amber, green, flint, blue, and dead leaf yellow:

COLORS

-  All
-  Amber (59)
-  Blue (12)
-  Flint (300)
-  Green (112)
-  Dead Leaf Yellow (31)

56. The final color of each of these products is defined by its associated transmission properties, which are well known in the art and must be specified prior to melting in order to

ensure that the final product falls within an acceptable color and transmission range for each specific product:



57. In fact, each of O-I's glass products (tied to an internal product code) is specifically linked to and defined by, among other things, the particular color(s) of that product:



	W-1503	12oz Commander	4oz Multi Use
Product code	500204	500836	8921002
Capacity (oz / ml)	25.361 / 750.00	12.000 / 354.88	4.000 / 118.29
Brimfull capacity (oz / ml)	26.054 / 770.50	12.750 / 377.06	4.058 / 120.00
Weight (oz / g)	13.000 / 368.54	6.875 / 194.90	3.175 / 90.00
Diameter (in / mm)	3.016 / 76.61	2.458 / 62.43	1.937 / 49.20
Height (in / mm)	11.171 / 283.75	9.000 / 228.60	3.626 / 92.10
Finish	30-3110	26-640* 26-540*	43-400
Color	Flint UV Green (Champagne Green)	Amber Flint GB-16475	Flint

58. Moreover, O-I's products brochures stress how important to O-I's customers it is that O-I employ methods that create glass of the particular color requested by each individual customer purchasing the final products made from O-I's infringing processes. For example:

We understand the importance of shape, weight, color, finish and decoration when it comes to creating the right positioning for your wine. We offer a wide variety of designs, including models aimed at the economy, mid-range and premium sectors.

We understand the importance of shape, weight, color, finish and decoration when it comes to creating the right positioning for your beer. We offer a wide variety of designs, including models aimed at the economy, mid-range and premium sectors. Sizes also range from 25cl to 1l, enabling brand owners to create consistent packaging across their product line.

We understand the importance of shape, weight, color, finish and decoration when it comes to creating the right positioning for your brand. So for each spirits category, we offer a wide variety of designs, including models aimed at the economy, mid-range and premium sectors. Sizes also range from 2cl to 2l, enabling brand owners to create consistent packaging across their product line.

59. The transmission properties associated with each glass product of a particular

color are set by the purchase specifications of O-I's customers and/or according to O-I's standard operating procedures in order to create recycled glass products of any particular color. For example, O-I's public job descriptions confirm that O-I employs quality manager employees who are specifically tasked with ensuring that O-I's glass manufacturing process yields glass containers that conform to its customers' specifications. And during a meeting with Plaintiffs, O-I disclosed the transmission properties at which O-I produces amber glass and how that standard specification corresponds to the Anheuser-Busch standard color specification and corresponding transmission properties for amber beer bottles:

AB Redness Ratio Color Spec. Steve Weiser said that he thought the AB color specification was unrealistic. They produce glass at a T550 level [3.18 mm] of 12.5%. At that level, which he characterized as dark, it is hard to achieve the redness ratio. I disagree. We have made very red glasses with T550s of less than 11%.

60. O-I then calculates the desired glass coloring oxide levels and key glass color indicator parameters that enable it to create recycled glass products of a particular color with defined transmission properties from the specified raw materials and mixed color cullet it includes in each glass batch or formula. During meetings with Plaintiffs, O-I stated that it calculated the appropriate coloring oxide agents level and color indicator parameters necessary to create final glass products of a particular color from batches containing mixed color cullet:

Does Flint Harm Amber Glass? No. Steve Weiser pointed out that flint can very well be managed in amber glass. He noted that there have been times, incredibly, when O-I purposely mixed together single color cullet [SCC] flint (10 – 15%) with SCC amber (45%) and SCC green (10-15%) to make a composite cullet for their amber tanks. Economics at work, of course. The glass chemistry is handled in the usual manner and in this sense O-I seems quite competent in managing a mixture of colors in their tanks, much like S-G.

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Batch Formulation Software. With regard to the GMG BFS, Steve said that O-I can do their own formulation calculations. Furthermore, he said that O-I is concentrating on reducing batch changes, not increasing them. This arises from a history of the plants making their own batch changes because of hot end operator complaints that the glass was not "sweet" enough. Reminds

61. O-I's US patent 9,475,724 (which cites both patents-in-suit) also discloses the calculation and use of desired glass color oxide level and key glass color indicator parameters to make glass of a particular color from mixed color cullet:

If used, the secondary, additive materials provide the soda-lime glass with more stable quality. For example, additive materials may enable better aesthetic properties, such as color, and/or other physical qualities, such as seed (i.e., bubble) prevention and "redox" number adjustment. They do not include main oxide constituent glass forming materials of the soda-lime glass. Some notable secondary, additive materials include colorants, decolorants, fining agents, oxidizers, and reducers. The colorants and decolorants can be used to provide the soda-lime glass with a variety of colors including flint (colorless), amber, green, and blue. The fining agents can be used to prevent the incorporation of bubbles in the soda-lime glass. These agents work by removing insoluble gas bubbles—typically oxygen—from the soda-lime glass melt before it cools and hardens. The oxidizers and reducers can be used to manage the "redox number" of the soda-lime glass melt as desired.

TABLE 1

Glass Color	Color affecting Compound(s)	Redox Number
GREEN		
Emerald Green	Chromium oxide	-10 to +1
Georgia Green	Chromium oxide	
Dead Leaf Green	Chromium oxide	
Champagne Green	Chromium oxide	
French Green	Chromium oxide	
Antique Green	Chromium oxide	

TABLE 1-continued

Glass Color	Color affecting Compound(s)	Redox Number
FLINT	Iron oxide, Selenium	+2 to +20
AMBER	Iron, sulfur, excess carbon	-40 to -20
BLUE & OTHERS		
Arctic Blue	Cobalt oxide	+2 to +20
Cobalt Blue	Cobalt oxide	-20 to +10

The secondary, additive materials, if used, are mixed with the glass-forming materials to influence the aesthetic and other physical qualities of the soda-lime glass wall 12. The term "physical qualities" as used here refers to qualities of the soda-lime glass wall 12 that can be achieved without altering the main oxide content of its glass composition in a substantial way. For example, certain secondary, additive materials can be added to the soda-lime glass batch to affect the color and fining of the manufactured soda-lime glass wall 12 without changing the main oxide content of its glass composition. The secondary, additive materials are preferably provided in powder form to facilitate easy mixing with the cullet.

Colorants and decolorants are secondary, additive materials that will affect the color of the soda-lime glass wall 12. Colorants are compounds that produce a color in the soda-lime glass wall 12 other than flint, and decolorants are compounds that mask colors. Examples of suitable colorants may include, for example, iron oxides (e.g., FeO and/or Fe₂O₃), chromium oxides (e.g., CrO or Cr₂O₃), cobalt oxides (e.g., CoO or Co₂O₃), nickel, copper, selenium, manganese, titanium, and/or a combination of sulfur, iron, and carbon. Some of the different colors that can be promoted by these colorants are listed above in Table 1. Examples of suitable decolorants may include, for example, selenium, manganese, manganese dioxide, and cerium oxide. Selenium and manganese can both be used at low concentrations to neutralize the green tint often present in glass as a result of iron impurities. At higher concentrations, however, selenium and manganese begin to promote a reddish-pink color (peach) and a purple color, respectively.

62. Additionally, O-I's public job descriptions for its furnace engineers confirm that such engineers will calculate the appropriate amount of glass coloring oxide level and glass color indicator parameters:

Computer Jobs, Employment in Perrysburg, OH | Indeed.com

<https://www.indeed.com/q-Computer-I-Perrysburg,-OH-jobs>

Owens-Illinois. Perrysburg, OH. As required, operates mixing system on manual basis; weighs colorizer and decolorizers, using small hand scales; checks and ...

O-I hiring Furnace Technician- Streator, IL in Perrysburg, OH ...

<https://www.linkedin.com/jobs/view/furnace-technician-streator-il-at-o-...>

Owens-Illinois, Inc. (NYSE: OI) is the world's largest glass container manufacturer ... As required, operates mixing system on manual basis; weighs colorizer and ...

Provide and/or develop technical expertise to design, install, troubleshoot material handling systems including, raw material unloading, conveying and storage, material weigh, conveying, mixing, delivery to the furnace, post mixer delivery weigh, distribution of colorant materials, dust containment methods during unloading, mixing and delivery of batch materials, unloading, crushing, storage, weigh and delivery of crushed glass cullet to the process, storage, weigh and delivery of furnace abatement emission dust collected for reuse in the glass making process, support to the Process control group for batching control systems.

As a Technical Specialist in Glass Science, you will be responsible for technically supporting the building capabilities of the regional glass manufacturing operations by providing expertise to OI North America glass plants and the Technical Capabilities Group. You will also provide improvement advice to plants in the areas of glass composition, colorant, forehearth operations, furnace color change programs and other quality issues related to glass chemistry issues. You will be responsible for the implementation of significant improvements in manufacturing capabilities as well as significant improvements in performance across the region while ensuring the standardization of best practice processes.

63. O-I then calculates and creates the composition or batch formula of the particular color of recycled glass that it is seeking to create by following the steps outlined above, which Plaintiffs incorporate here by reference. O-I specifies the particular color and associated transmission properties of the recycled glass products that it is seeking to create, selects the raw materials and mixed color cullet that it desires to use in the batch, determines the component properties of those raw materials and mixed color cullet, determines the relative color composition of that mixed color cullet, determines what percentage mixed color cullet will comprise the batch and thus final glass, calculates the desired glass color oxide agent levels suitable to produce the specified color of glass with desired transmission properties from all ingredients added to the batch or formula. O-I calculates the composition or batch formula necessary to obtain the desired glass coloring oxide agent levels for the particular color of glass O-I is seeking to create by inputting a desired or target theoretical glass composition, which reflects the desired transmission properties of the glass that O-I is calculating the composition or batch formula of. O-I then calculates the desired composition or batch formula, which is the composition or formula that will be suitable to adjust final glass coloring oxide agent levels to said desired glass coloring oxide agent levels for glass of said particular color with said specified transmission properties. The composition or formula that will be so “suitable” will be the composition or formula that achieves (or comes as close thereto as achieving) the desired or target theoretical glass composition. If O-I changes the weights of the desired raw materials or mixed color cullet added to the batch, known relationships are used to compute an updated theoretical glass composition, the coloring oxide ratios, and the key glass color indicator parameters. When the theoretical glass composition of the target glass matches the desired

theoretical glass composition, O-I will not only have computed the desired glass coloring oxide agent levels, the coloring oxide ratios, and the key glass color indicator parameters of the glass that O-I is seeking to create, but O-I will also have computed the amounts and percentages of virgin raw materials, mixed color cullet, and glass coloring oxide agents suitable to adjust final glass coloring oxide agent levels to said desired glass coloring oxide agent levels needed to achieve the particular color of glass (with specific transmission properties) that O-I desires to manufacture and then manufactures to meet its customers specifications and orders.

64. O-I's public job descriptions disclose that O-I employs technical specialists to enable it to so calculate batch composition changes in its North American plant locations:

Your Role:

As a Technical Specialist in Glass Science, you will be responsible for technically supporting the building capabilities of the regional glass manufacturing operations by providing expertise to OI North America glass plants and the Technical Capabilities Group. You will also provide improvement advice to plants in the areas of glass composition, colorant forehearth operations, furnace color change programs and other quality issues related to glass chemistry issues. You will be responsible for the implementation of significant improvements in manufacturing capabilities as well as significant improvements in performance across the region while ensuring the standardization of best practice processes.

Your Responsibilities:

- Conduct/report analyses of raw material and cullet samples
- Conduct/report analyses of stone defect samples, blister samples, and cord samples
- Calculate batch composition changes for North American plant locations
- Troubleshoot glass technology-related problems (stones, cord, color, seed, and blisters)
- Develop full furnace color change programs for the global operations
- Travel for glass technology support of North American operations
- Conduct audits of the North American plant locations to ensure compliance with fundamental requirements

65. During meetings with Plaintiffs, O-I stated that it calculated the appropriate glass color oxide level and key glass color indicator parameters necessary to create final glass products of a particular color from a glass batch containing mixed color cullet:

Does Flint Harm Amber Glass? No. Steve Weiser pointed out that flint can very well be managed in amber glass. He noted that there have been times, incredibly, when O-I purposely mixed together single color cullet [SCC] flint (10 – 15%) with SCC amber (45%) and SCC green (10-15%) to make a composite cullet for their amber tanks. Economics at work, of course. The glass chemistry is handled in the usual manner and in this sense O-I seems quite competent in managing a mixture of colors in their tanks, much like S-G.

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66. O-I’s ’724 patent also discloses a process by which O-I calculates the composition or batch formula necessary to create a particular color of glass from a glass batch comprising mixed color cullet and glass color oxide agents that affect the color of the final glass.

67. O-I’s marketing video, O-I Fire and Sand – How Glass Is Made (<https://www.youtube.com/watch?v=dOsXOsb7oz4>), confirms that O-I’s infringing processes are used to create recycled glass products of a particular color with specific transmission properties from glass batches containing mixed color cullet:









68. O-I's acts of infringement have caused damage to Plaintiffs, and Plaintiffs are entitled to recover from O-I the damages sustained by Plaintiffs as a result of O-I's wrongful acts in an amount subject to proof at trial.

WILLFUL INFRINGEMENT

69. Plaintiffs incorporate by reference Paragraphs 1-68 above.

70. O-I's infringement of any or all of the patents-in-suit is willful and deliberate, entitling Plaintiffs to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

71. O-I met with Plaintiffs on multiple occasions to discuss the patents-in-suit and other patents owned or exclusively licensed by Plaintiffs related to using mixed cullet in the glass manufacturing process. For example, in April and May 1995, Eftek Corp. (a predecessor to Green Mountain) hosted a meeting in which representatives from O-I travelled to New Jersey to meet with Eftek to discuss the then patent-pending technology that later issued as the '737 patent. In a May 19, 1995 letter to OI, Eftek expressly referenced the patent-pending: "After our last meeting at our office, it is apparent to us that our patent pending (#08/399,299) is new to the glass industry."

72. Representatives of Plaintiffs met with O-I several times to discuss Plaintiffs' technology. For example, Dr. Richard Lehman—Plaintiffs' Technical Director and inventor of the '521 patent—met with O-I at its Perrysburg, OH plant in September 2005 to discuss cullet and Plaintiffs' technology.

73. In or around 2006, O-I told Plaintiffs that they do not use Plaintiffs' technology, were not infringing their patents, and therefore did not need a license. Those representations were knowingly false, demonstrating O-I's subjective bad faith.

74. In addition, O-I's US patent 9,475,724 cites both of the patents-in-suit. O-I filed the patent application that resulted in that patent on November 25, 2013, which provides independent confirmation that O-I had knowledge of the patents-in-suit at least by 2013.

75. O-I has deliberately and willfully infringed the patents-in-suit despite the objectively high likelihood that its actions constitute patent infringement. O-I's willful infringement amounts to egregious misconduct and is worthy of punishment.

JURY DEMAND

76. Plaintiffs demand a trial by jury on all issues.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs GREEN MOUNTAIN GLASS, LLC AND CULCHROME, LLC request entry of judgment in their favor and against Defendants OWENS ILLINOIS CONTAINERS, INC. and Defendant OWENS-BROCKWAY GLASS CONTAINER INC. as follows:

a) Declaration that Owens Illinois and Defendant Owens-Brockway Glass Container have infringed U.S. Patents Nos. 5,718,737 and 6,230,521;

b) Declaration that Owens Illinois's and Defendant Owens-Brockway Glass Container's infringements have been willful;

c) Awarding the damages arising out of Owens Illinois's and Defendant Owens-Brockway Glass Container's infringements of U.S. Patents Nos. 5,718,737 and 6,230,521, including enhanced damages pursuant to 35 U.S.C. § 284, to Plaintiffs together with prejudgment and post-judgment interest, in an amount according to proof;

d) An award of attorneys' fees pursuant to 35 U.S.C. § 285 or as otherwise permitted by law; and

For such other costs and further relief as the Court may deem just and proper.

DATED: October 14, 2019

Respectfully submitted,

By: /s/ Charles L. Ainsworth

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